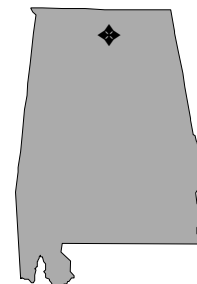


Size: 38,300 acres
Mission: Army Aviation and Missile Command
HRS Score: 33.40; placed on NPL in June 1994
IAG Status: Federal Facility Agreement under negotiation
Contaminants: Heavy metals, solvents, SVOCs, CWM, and pesticides
Media Affected: Groundwater, sediment, and soil
Funding to Date: \$46.7 million
Estimated Cost to Completion (Completion Year): \$249.1 million (FY2011)
Final Remedy in Place and Response Complete Date: FY2004



Huntsville, Alabama

Restoration Background

Past operations at the Redstone Arsenal (RSA) include production, receipt and shipment, storage, demilitarization, and disposal of chemical and high-explosive munitions. Commercial chemical pesticides also have been produced at the installation. RSA currently conducts military research and development, manages procurement, and supports the Army's aviation and missile weapons systems.

Environmental studies at RSA began in FY77 and identified 297 sites. Of these sites, 215 are Army sites and 82 are other sites located at Marshall Space Flight Center, which are the responsibility of NASA. Site types include past disposal sites, landfills, open burn and open detonation (OB/OD) areas, chemical munition disposal sites, and solvent spill sites. Primary contaminants of concern include heavy metals, solvents, semivolatile organic compounds (SVOC), chemical weapons/munitions (CWM), and pesticides.

In FY94, Interim Remedial Actions (IRA) began at three dismantled lewisite manufacturing plants, as well as at the closed portions of the OB/OD grounds. Surface impoundments at two of the plants were fitted with an engineered clay cap, and a proposed groundwater pump-and-treat system was pilot-tested at the OB/OD grounds.

Also in FY94, RSA formed a technical review committee (TRC) and established information repositories at five locations accessible to the public.

As part of Interagency Agreement (IAG) negotiations in FY95, the Army identified 11 sites as requiring no further action. All parties agreed to a list of 86 sites that would be covered under the agreement. In 1996, negotiations on the agreement continued, and the Army submitted a revised draft IAG to the regulatory agencies.

In FY95, the installation completed three IRA designs, including three groundwater extraction and treatment systems and a RCRA cap.

In FY96, Site Inspection fieldwork began at 38 sites, Remedial Investigation (RI) activities continued at 39 sites, and Feasibility Study (FS) activities began at 10 sites. The Army constructed a groundwater extraction system and an air stripper and began treatment of contaminated groundwater in the upper aquifer of the closed sanitary landfill. In addition, the Army awarded a construction contract for a groundwater extraction and treatment system at the former Redstone Arsenal Rocket Engine (RARE) Facility North Plant.

RSA officials surveyed the public in FY96 to determine community interest in forming a restoration advisory board. Little interest was expressed.

FY97 Restoration Progress

The installation completed the RCRA cap for the closed lewisite manufacturing plant. Construction of a groundwater extraction and treatment plant was initiated, and a pilot study for a soil vapor extraction (SVE) system at the RARE Facility North Plant began. All fieldwork for a Removal Action involving an industrial septic tank system was completed in late FY97. The installation also completed an FS and initiated Proposed Plans for 10 sites.

The Army completed no-further-action decision documents for three sites and Proposed Plans for four additional sites. Three of the plans involved long-term monitoring as the preferred alternative.

The installation improved site management techniques in FY97 by reorganizing sites into operable units, developing an installationwide RI work plan and installationwide background and baseline

concentrations, and implementing site-specific work plan review meetings to expedite regulatory review processes.

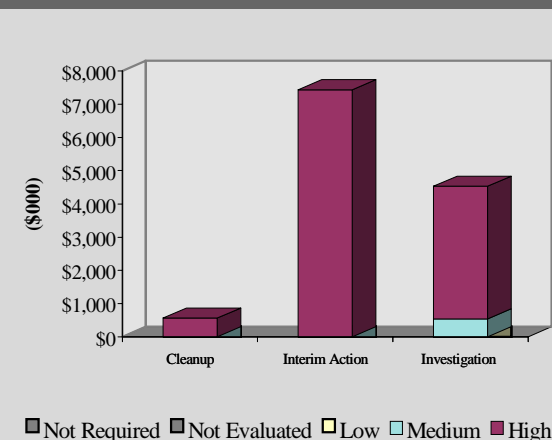
Formal partnering efforts with EPA Region 4, the Alabama Department of Environmental Management (ADEM), and the Army also began.

The first three activities in the current plan of action were originally scheduled for completion in FY97. They were delayed because the installation is awaiting EPA coordination and input.

Plan of Action

- Finalize RI/FS activities on all known Installation Restoration sites by late FY98 or early FY99
- Complete construction and startup of the groundwater extraction and treatment plant at the OB/OD grounds in FY98
- Continue negotiations on the Federal Facility Agreement in early FY98
- In FY98, use SVE at a solvent-contaminated soil site and use extraction at a solvent-contaminated groundwater location
- Continue efforts to reach Records of Decision on multiple sites in FY98

FY98 FUNDING BY PHASE AND RELATIVE RISK



Size: 2,987 acres
Mission: Conduct pilot training
HRS Score: NA
IAG Status: Federal Facility Agreement signed in 1987
Contaminants: VOCs, petroleum/oil/lubricants, metals, pesticides, and herbicides
Media Affected: Groundwater and soil
Funding to Date: \$44.2 million
Estimated Cost to Completion (Completion Year): \$85.1 million (FY2029)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY1999



Reese, Texas

Restoration Background

In July 1995, the BRAC Commission recommended closure of Reese Air Force Base, which is used for pilot training and related activities. The installation closed in September 1997.

Preliminary Assessments and Site Inspections conducted from FY84 through FY88 identified 13 sites, including landfills, surface impoundments, underground storage tanks (UST), sludge spreading areas, industrial drain lines, and fire training areas. Historical waste management practices have contaminated groundwater and soil with volatile organic compounds (VOC), fuels, heavy metals, pesticides, and herbicides. To date, 30 USTs have been removed from the installation during Interim Remedial Actions (IRA), which began in the late 1980s. Of the 14 remaining USTs, 10 are regulated.

In FY93, the installation began an IRA in which an alternative source of drinking water was provided to off-base residences and businesses whose well water was contaminated. The installation has connected 28 residences and businesses to the city water supply system, provided 15 well owners with bottled water, and filtered or treated water at 11 wells. Studies determined that Reese Air Force Base was the source of trichloroethene (TCE) contamination in the sole-source aquifer for the region. An Environmental Working Group was formed in FY93 to expedite the restoration process. The group includes representatives of the installation, EPA, state regulatory agencies, the U.S. Army Corps of Engineers, and the primary environmental contractor at the installation.

In FY95, the installation reached an agreement with the state of Texas to implement an IRA to control a plume of TCE-contaminated groundwater. Under the IRA, the base installed a groundwater extraction and treatment system with an air stripper to treat groundwater contaminated with TCE and other VOCs. A pilot-scale study

indicated that soil vapor extraction (SVE) was a practicable means of treating soil contaminated with petroleum/oil/lubricants. Work plans for a full-scale SVE system were completed.

Also in FY95, the city of Lubbock formed a Local Redevelopment Committee (LRC) and issued a request-for-proposal for a study of reuse possibilities at the installation. In addition, a restoration advisory board (RAB) was formed.

During FY96, the RAB met every 2 months and established a BRAC cleanup team, which includes representatives of the installation, the state regulatory agency, and the Air Force Base Conversion Agency. The installation undertook a RCRA Facility Investigation (RFI) to determine the source and extent of contamination. The installation also began a corrective measures study (CMS) to address contaminated media identified during the RFI and completed construction of the SVE system. The installation initiated an Environmental Baseline Survey (EBS) and an Environmental Impact Survey (EIS). It also renamed the LRC the Lubbock Reese Redevelopment Authority. The authority is able to accept government funding and property through leasing.

FY97 Restoration Progress

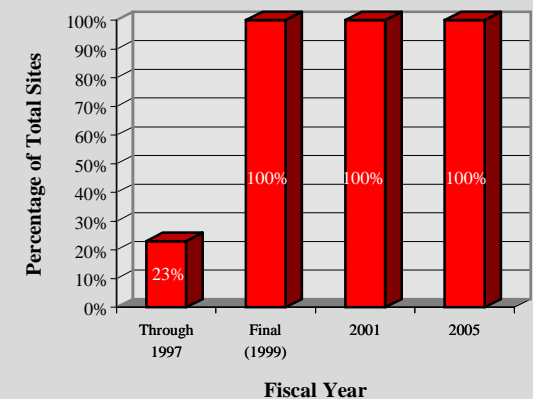
The installation completed the RFI that was initiated to determine source and extent of contamination. RFIs were initiated at 20 solid waste management units, and wells were installed at the boundary of the installation. The EBS and the EIS were completed. The RCRA permit for closure of Picnic Lake was modified and Golf Course Lake was closed.

Several activities scheduled for FY97 (completion of the CMS, implementation of an interim corrective action [ICA] at Picnic Lake, and expansion of the ICA pump-and-treat system) have not been completed, although they have been initiated.

Plan of Action

- Complete the CMS for 16 sites in FY98
- In FY98, implement an ICA at Picnic Lake involving installation of a pump-and-treat system
- Complete corrective measures implementation at up to 16 sites in FY98
- Close the RCRA permit on Picnic Lake and Golf Course Lake in FY98
- Expand the existing pump-and-treat system in FY98
- Begin investigation of seven sites in FY98
- Remediate UST, aboveground storage tank, and oil-water separator sites in FY98
- Clean out industrial drain lines in FY98
- Design and construct a landfill cap at the Southwest Landfill in FY98

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 428 acres
Mission: Housed the 442d Fighter Wing; supported A-10 aircraft
HRS Score: NA
IAG Status: None
Contaminants: Petroleum/oil/lubricants, PAHs, PCBs, VOCs, and heavy metals
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: \$4.5 million
Estimated Cost to Completion (Completion Year): \$0.5 million (FY2000)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY1997



Kansas City, Missouri

Restoration Background

In July 1991, the BRAC Commission recommended closure of Richards-Gebaur Air Reserve Station, the transfer of the 442d Tactical Fighter Wing to Whiteman Air Force Base, and the transfer of the 36th Aeromedical Evacuation Squadron and the 77th and 78th Aerial Port Squadrons to Peterson Air Force Base. The installation was closed on September 30, 1994.

Environmental studies have been ongoing at the installation since FY82. Prominent site types identified at the installation include a fire training area, vehicle maintenance areas, hazardous waste drum storage areas, fuel storage areas, and underground storage tanks (UST). The installation conducted several Interim Remedial Actions (IRA), including soil bioventing, removal of contaminated soil, and removal of polychlorinated biphenyl (PCB)-contaminated equipment. In FY95, the installation completed an IRA involving the removal of two USTs. The installation has also installed a passive soil bioventing system at a former UST site.

An Environmental Baseline Survey (EBS) completed in FY94 designated 114 acres as CERFA-clean. The installation uses interim leases to lease parcels to the Kansas City Aviation Department (KCAD). Runway and aviation support facilities were transferred to KCAD before the installation was closed. Facilities permitted to the Marine Corps were also available for immediate reuse. KCAD developed a land reuse plan and currently allows use of portions of the property leased to it for remediation projects. Supplemental Environmental Baseline Surveys are used as attachments to finding-of-suitability-to-lease (FOSL) documents as further property is leased.

A restoration advisory board (RAB) and a BRAC cleanup team (BCT) have been formed. The station holds quarterly RAB meetings to keep the public informed of ongoing environmental activities on the base.

It also advertises RAB meetings and provides additional information in public notices. The BCT established priorities for all remaining remediation work. The BRAC Cleanup Plan was updated in FY95.

The RAB met quarterly in FY96. The BCT met monthly to discuss cleanup standards and the use of remedial techniques at a former petroleum/oil/lubricant (POL) storage yard.

FY97 Restoration Progress

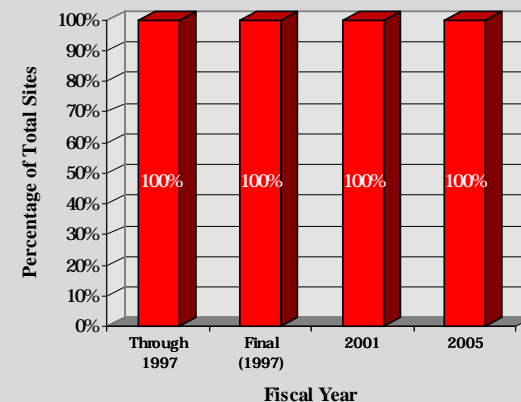
A groundwater survey was conducted for the central drainage area and five sites. In addition, the EBS was revised, and implementation of the land reuse plan continued. The installation identified 114 acres as CERFA-clean and is awaiting the concurrence of regulatory agencies. One site remains to be evaluated for relative risk.

Some activities scheduled for completion in FY97 were delayed because of the need for a Consolidation and Evaluation Study of the environmental program and a lack of state oversight due to Defense and State Memorandum of Agreement (DSMOA) funding issues.

Plan of Action

- In FY98, prepare documentation for the decision to pursue no further action at six sites
- Lease remaining property to KCAD in FY98
- Continue Phase III of the remediation project at the POL yard
- Begin long-term monitoring of groundwater in FY98
- Perform Evaluation and Consolidation Study in FY98
- Perform Focused Feasibility Study for soil and groundwater in FY98

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 2,016 acres
Mission: Provide airlift support for an Ohio Air National Guard Unit and Ohio Army National Guard
HRS Score: 50.00; proposed for NPL in January 1994
IAG Status: None
Contaminants: Pesticides, paint, spent fuel, waste oil, solvents, and heavy metals
Media Affected: Groundwater and soil
Funding to Date: \$19.7 million
Estimated Cost to Completion (Completion Year): \$15.3 million (FY2014)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY1999



Columbus, Ohio

Restoration Background

In July 1991, the BRAC Commission recommended closure of Rickenbacker Air National Guard Base. In July 1993, it was recommended that Rickenbacker be realigned rather than closed. Realignment was completed on September 30, 1994.

Environmental studies identified the following sites at the installation: fuel spill areas, underground storage tanks (UST), fire training areas, storm drainage areas, drum storage areas, pesticide storage areas, and coal storage sites. Seven miles of storm drainage system have been identified as a source of contamination. UST and fuel spill sites are potential sources of petroleum and solvent contamination in soil and groundwater. The installation was proposed for listing on the National Priorities List (NPL) because of the potential effects of contamination on underlying groundwater, which supplies drinking water to 150,000 residents in nearby communities.

In FY94, the installation formed a restoration advisory board (RAB) and prepared a basewide Environmental Baseline Survey (EBS). Remedial Investigation (RI) activities were conducted at 15 sites, and a draft RI Report was published. In FY95, the final Environmental Impact Statement was published and a Record of Decision (ROD) was signed. In the same year, the installation completed Interim Remedial Actions at two sites and removed more than 50 USTs from 13 sites.

Approximately 130 acres have been identified as CERFA-clean, but the installation has yet to receive regulatory concurrence on those designations.

During FY96, the installation conducted the fieldwork for the Supplemental RI at 14 sites, evaluated sampling results for 6 sites, sampled 11 sites, and prepared risk assessments at 3 sites. No further remedial action planned (NFRAP) documents were signed with the

regulatory agencies for seven Installation Restoration Program (IRP) sites, and seven other IRP sites were closed with regulatory concurrence. Phase II of the EBS was reviewed, and two additional sites were identified for IRP status. A project to remediate friable asbestos and lead-based paint was initiated.

FY97 Restoration Progress

The installation published the draft Phase II RI Report and initiated a Feasibility Study (FS) for six IRP sites. The Air Force Base Conversion Agency signed a Memorandum of Agreement (MOA) with, and completed the transfer of a 30-acre parcel to, the Army Reserves. The sale and transfer of the 1.3-acre electrical substation to the local power company was completed.

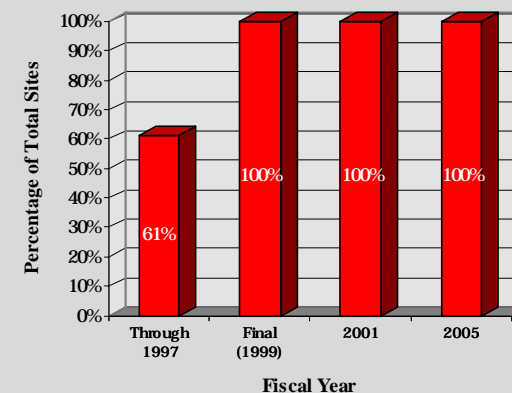
The installation completed closure of the Heat Plant Lagoon, the Water Treatment Plant Sludge Drying Beds, and the Water Production Wells. Abatement of friable asbestos and remediation of lead-based paint were also completed. The installation removed three USTs from a vehicle refueling facility vacated by the Air National Guard and completed the site assessments and Remedial Actions at two UST IRP sites. A Treatability Study and a risk assessment were started at the former hazardous waste storage area to investigate potential risk-based closure of the facility. Twelve NFRAP documents for nine IRP sites and three areas of concern (AOC) were signed with the regulatory agencies. The BRAC cleanup has given oral approval for completing NFRAP documents for eight more IRP sites and three AOCs.

Some activities scheduled for completion in FY97 were delayed because the Phase II RI Report was delayed, postponing completion of several NFRAP documents.

Plan of Action

- Reach regulatory concurrence on no further action designation and complete closure at two IRP sites
- Complete and sign NFRAP documents for eight IRP sites and three AOCs
- Publish the final Phase II RI Report and complete the FS for five IRP sites
- Complete the Remedial Design and award contracts for Remedial Actions for six IRP sites, as required
- Accomplish site assessment and publish a Remedial Action Plan for the location of the three USTs removed from the former refueling facility
- Complete the Treatability Studies and accomplish a risk assessment for possible risk-based RCRA closure of the former hazardous waste storage facility
- Begin long-term monitoring and long-term operation at two IRP sites
- Sign new MOA with Army National Guard
- Sign a long-term lease with the reuse agency for Parcel D1

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 172 acres
Mission: Manufacture grenades, projectiles, and steel cartridge casings
HRS Score: 63.94; placed on NPL in February 1990
IAG Status: IAG signed in April 1990
Contaminants: Chromium, cyanide, and zinc
Media Affected: Groundwater and soil
Funding to Date: \$39.1 million
Estimated Cost to Completion (Completion Year): \$60.3 million (FY2010)
Final Remedy in Place and Response Complete Date: FY1998



Riverbank, California

Restoration Background

In 1942, the Army constructed what is now the Riverbank Army Ammunition Plant as an aluminum reduction plant to supply military requirements. Since 1951, the installation has manufactured steel cartridge cases for the Army and the Navy. Other manufactured products include grenades and projectiles, which are shipped to other ammunition plants for loading operations.

In FY85, chromium was detected in drinking water wells at residences located west of the installation. As an Interim Action, the installation began a quarterly groundwater monitoring program. The Army provided alternative water supplies from deeper groundwater wells for five residences with contaminated wells. In FY85, a Preliminary Assessment and Site Inspection identified the following sites: an industrial wastewater treatment plant, an abandoned landfill, and four evaporation and percolation ponds located north of the plant near the Stanislaus River. Chromium, cyanide, and zinc are the primary contaminants affecting groundwater and soil.

A FY90 Interim Action included construction of a groundwater extraction and treatment system. In FY92, the Army constructed a water distribution system for 70 nearby residences. In FY93, the regulatory agencies approved the final Remedial Investigation and Feasibility Study (RI/FS) Report. The Army presented the Proposed Plan to the public for review in FY93. The plan recommended (1) expansion of the groundwater extraction and treatment system to provide complete capture of the contaminated groundwater plume and (2) placement of a final cap over the abandoned landfill.

In FY94, the installation completed a Removal Action at the four evaporation and percolation ponds and received approval from EPA and the state regulatory agency for the first installationwide Record of Decision (ROD).

The installation formed a technical review committee (TRC), which includes representatives of the Army, EPA, and the state regulatory agency. The TRC meets monthly to discuss outstanding issues. To accelerate cleanup progress, the TRC developed a process for concurrent preparation and review of documents. The process allowed the Army, EPA, and the state regulatory agency to review the draft FS Report while the Army began preparing the ROD.

In FY95, the installation completed construction of the landfill cap and awarded the Remedial Action (RA) contract for expansion of the groundwater extraction and treatment system.

In FY96, the off-site groundwater extraction system was installed and placed on-line to minimize migration of the plume and to demonstrate capture of the plume. Work to expand the groundwater treatment system was 98 percent complete by the end of FY96. The installation initiated a maintenance program for the landfill cap. The Army petitioned EPA Region 9 to remove the installation from the National Priorities List (NPL) in September 1996, the first request for NPL delisting for an entire Army installation.

FY97 Restoration Progress

The installation completed expansion of the groundwater extraction and treatment system and initiated long-term monitoring. The petition to delist the installation from the NPL was submitted as scheduled. EPA approved the Preliminary Closeout Report and the Remedial Action Completion Report.

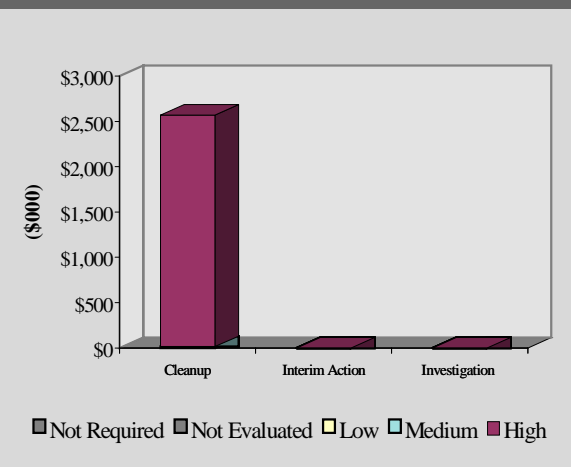
Extensive communication and negotiation with EPA made Construction Completion of the remedy possible. Riverbank became the first DoD installation to reach construction completion under the EPA Superfund 900 initiative. In addition, an innovative effort by the

design and the construction contractors to work together during operations in the first year allowed effective and efficient resolution of problems.

Plan of Action

- Complete closeout of the RA by FY03
- Achieve NPL delisting by FY03

FY98 FUNDING BY PHASE AND RELATIVE RISK



Size: 8,855 acres
Mission: Provide logistics support for aircraft
HRS Score: 51.66; placed on NPL in July 1987
IAG Status: IAG signed in July 1989
Contaminants: VOCs, paint strippers and thinners, paints, solvents, phosphoric and chromic acids, oils, cyanide, and carbon remover
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: \$80.5 million
Estimated Cost to Completion (Completion Year): \$356.7 million (FY2033)
Final Remedy in Place or Response Complete Date: FY2005



Houston County, Georgia

Restoration Background

In FY82, Preliminary Assessments and Site Inspections were completed for 33 sites at this installation. The most significant site consists of Landfill No. 4 and an adjacent sludge lagoon. The site is divided into the following three operable units (OU): source control (OU1), wetlands (OU2), and groundwater (OU3). Primary contaminants at the site include trichloroethene (TCE) and tetrachloroethane in soil and groundwater. Contaminants also have been released into a wetland area in the northwest corner of the installation.

Remedial Investigation and Feasibility Study (RI/FS) activities were initiated in FY86 and FY88. In FY93, the installation constructed run-on controls at OU1 and completed the pilot-scale system for lagoon solidification at OU1. Also in FY93, the installation completed the Remedial Design of the cover for Landfill No. 4.

In FY94, the installation began a RCRA Facility Investigation (RFI) at five sites. Interim Actions included encapsulation of Landfill No. 3 and removal of hazardous and radioactive waste from two other sites. In FY94, an interim Record of Decision (ROD) was signed for OU2. In FY95, an interim ROD was signed for OU3 and Interim Actions were completed at the Hazardous Waste Site. Final decision documents for 24 of the 33 sites recommended no further action.

Innovative technologies demonstrated at the installation include a bioremediation treatment process for groundwater contaminated with volatile organic compounds (VOC) and a pilot-scale process involving in situ volatilization and ex situ solidification at the sludge lagoons.

A technical review committee was formed in FY89 and converted to a restoration advisory board (RAB) in FY94. The RAB met quarterly in FY96. One of the highlights of that year was a multimedia briefing on the National Priorities List (NPL) site status. Partnering with EPA and

the Georgia Environmental Protection Division continued through periodic team meetings concerning the RCRA sites.

Also in FY96, full-scale cleanup of the sludge lagoon was completed on schedule. The cleanup included volatilization and removal of organic compounds, removal of sludge from the lagoon, stabilization to prevent leaching of metals into groundwater, on-site placement of the sludge, and installation of a cover over the stabilized sludge. The design was completed for the full-scale leachate collection system at Landfill No. 4, the groundwater extraction system, and the associated wastewater treatment plant. Construction of the systems and the plant began. The cover for Landfill No. 4 is being redesigned.

Quarterly monitoring began at OU2. Microbial activity was evaluated for remediation of contamination in both OU2 and the Base Industrial Area. Draft corrective action plans (CAP) were completed for two RCRA sites, final RFIs were completed for four sites, and one more RCRA site was recommended for no further action.

FY97 Restoration Progress

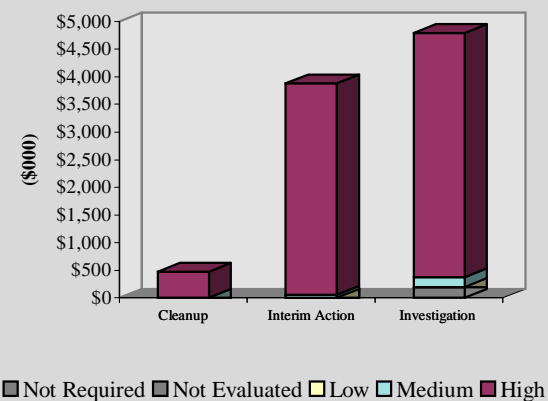
The installation completed the redesign of the Landfill No. 4 cover. The process of obtaining a National Pollutant Discharge Elimination System (NPDES) permit for a new pump-and-treat system began. In addition, a review priority list was established; this list is tracked on a regular basis.

The RAB was active and played a major role in Relative Risk Site Evaluation and in establishing cleanup priorities at the base. The RAB also was involved in the NPDES permit process.

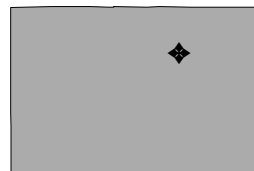
Plan of Action

- In early FY98, complete construction of the full-scale leachate collection system at Landfill No. 4, the groundwater extraction system, the Base Industrial Area interim measures groundwater hot-spot removal, and the combined treatment plant for all wastewater
- Complete CAPs for five RCRA sites in FY98
- Complete RFIs for the Base Industrial Area in FY98
- Complete OU2 construction contingency plan for containing sediment in FY98
- Complete RFI for the Horse Pasture site in FY98
- Begin remedial construction actions at three RCRA sites in FY98
- Begin design for Remedial Action at the Building 645 RCRA site in FY98
- Begin construction of Landfill No. 4 cover in FY98
- Begin final ROD and complete final FS for the NPL site in FY98
- Begin OU2 sediment removal study in FY98
- Continue quarterly monitoring of OU2 (wetlands) and analyze results of monitoring in FY98

FY98 FUNDING BY PHASE AND RELATIVE RISK



Size: 17,228 acres
Mission: Manufactured and stored chemical munitions
HRS Score: 58.15; placed on NPL in July 1987
IAG Status: IAG and Federal Facility Agreement signed in 1989
Contaminants: Pesticides, chemical agents, VOCs, chlorinated organics, PCBs, UXO, heavy metals, and solvents
Media Affected: Groundwater and soil
Funding to Date: \$802.8 million
Estimated Cost to Completion (Completion Year): \$2,163.9 million (FY2033)
Final Remedy in Place and Response Complete Date: FY2011



Adams County, Colorado

Restoration Background

Rocky Mountain Arsenal served as a chemical munitions production facility from 1942 until 1982. It has been the focus of an aggressive soil and groundwater contamination cleanup program since the 1980s. Contaminated sites include liquid waste in unlined and lined lagoons and basins, open burning and detonation areas, and landfills that received both liquid and solid wastes.

In FY84, the Army completed a Preliminary Assessment and Site Inspection that identified 179 potentially contaminated sites. Subsequently, the installation was divided into two operable units (OU): the On-Post OU and the Off-Post OU. The Army completed Remedial Investigation and Feasibility Study activities for both OUs by FY96. Identification of additional sites raised the total number of sites to 209.

To date, the Army has completed 14 emergency responses at 17 sites. Under this program, four groundwater extraction and treatment systems have been installed on site and one off site. All five systems continue to operate. In FY90, 10.5 million gallons of chemical wastewater and 580,000 cubic yards of contaminated soil were removed from the Basin F Area and placed in temporary storage facilities. In addition, hundreds of drums of waste and tons of asbestos and related materials were disposed of off post. The installation closed 450 abandoned wells and the sewer systems in the South Plants, and closed and removed the former hydrazine blending facility.

The installation used an innovative submerged quench incineration (SQI) system to remediate wastewater, primarily from Basin F. The SQI system treated more than 16 million gallons of scrubber brine and recovered more than 250,000 pounds of copper. The Army subsequently dismantled the system and removed it from the installation.

The installation continued to remove chemical agent-contaminated steel and to transport it to Rock Island Arsenal for smelting. The steel was generated from chemical production equipment, storage tanks, and ancillary equipment.

In FY94, the Army converted the technical review committee to a restoration advisory board (RAB). The 40-member RAB was active and met monthly throughout the year, playing an integral role in the success of the program.

In FY96, the Army and regulators signed Records of Decision (ROD) for both the Off-Post and the On-Post OUs. Once the RODs were final, the installation formed a partnership with representatives of the U.S. Fish and Wildlife Service, the Department of the Army, and Shell Oil Company for oversight of the program management contract.

FY97 Restoration Progress

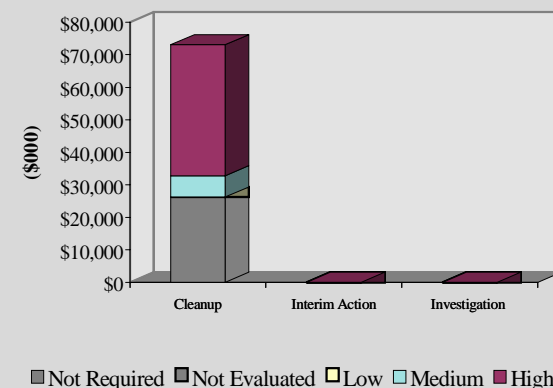
The oversight partnership, called the Remediation Venture Office (RVO), developed a Remedial Design and Implementation Schedule for the On-Post OU, and the installation continued the award process for the program management contract. The Army completed designs for chemical and sanitary sewer plugging and for slurry walls for the Army-Shell trenches and awarded contracts for construction. The Army also completed the design for the consolidation area within Basin A and continued designing an on-site hazardous waste landfill. The removal of chemical processing equipment and asbestos-containing material also continued. The use of advanced geophysical techniques accelerated the investigation of the Army-Shell trenches. The RVO continued to improve site management and develop good partnering relationships.

The first four activities in the current plan of action originally were scheduled for completion in FY97 but were delayed because the program management contract award was protested.

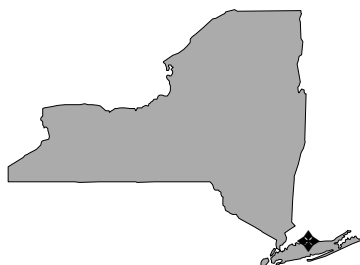
Plan of Action

- Award program management contract in FY98
- Complete the construction on the chemical and sanitary sewer plugging project in FY98
- Complete construction on the Army-Shell trenches slurry wall project in FY98
- Complete the contract award for the Basin A consolidation area remediation in FY98
- Complete design of the hazardous waste landfill and award the construction contract in FY98
- Complete post-ROD Removal Actions for asbestos and chemical process equipment in FY98
- Complete the Phase I (outlying areas) task design and award the construction contract in FY98
- Continue implementing the groundwater and surface water monitoring programs in FY98

FY98 FUNDING BY PHASE AND RELATIVE RISK



Size: 50 acres
Mission: Provide combat communications and electronics installation
HRS Score: NA
IAG Status: None
Contaminants: Waste oil, diesel fuel, asbestos, and solvents
Media Affected: Soil
Funding to Date: NA
Estimated Cost to Completion (Completion year): NA
Final Remedy in Place or Response Complete Date for BRAC Sites: NA



Roslyn, New York

Restoration Background

In July 1995, the BRAC Commission recommended closure of Roslyn Air Guard Station. The installation closed on September 30, 1997.

Environmental studies have identified several sites at the installation. Historically, paint thinner, waste oil, diesel oil, and solvents were sprayed on the access road to control dust. Liquid industrial waste was stored at the Old Waste Holding Areas and the Engineer Shop. As a result of those activities, soil was contaminated with petroleum compounds and solvents. In addition, approximately 90 percent of the installation's buildings contain asbestos. Interim Actions conducted at the installation have included removal of all underground storage tanks and associated contaminated soil and sampling of on-site drinking water. In FY94, the installation completed fieldwork for Site Inspection activities at three sites. In FY95, the three sites were recommended by the Air Force for no further action; the state concurred in this recommendation.

FY97 Restoration Progress

The Air Force Base Conversion Agency (AFBCA) continued preparation of National Environmental Policy Act (NEPA) documentation for the transfer and reuse of the installation. An Environmental Baseline Survey (EBS) was completed in November 1996, and state concurrence on the EBS was obtained in December 1996. The EBS identified 46 acres as uncontaminated. Approximately 4 acres at nine sites were identified as requiring additional investigation to determine whether releases of hazardous materials had occurred, and if so, what the extent of the releases was. In September 1997, a contract was awarded under AFBCA direction for sampling and analysis with limited interim Removal Actions.

Plan of Action

- Complete NEPA process for the disposal and reuse of the property
- Conduct sampling and analysis as needed to transfer property
- Remediate any areas requiring action

SITES ACHIEVING RIP OR RC PER FISCAL YEAR

No data available.

Size: 2,254 acres
Mission: Provide communication support
HRS Score: 34.28; placed on NPL in October 1989
IAG Status: Federal Facility Agreement signed in March 1992
Contaminants: Heavy metals, PCBs, pesticides, herbicides, and phenols
Media Affected: Groundwater and soil
Funding to Date: \$3.5 million
Estimated Cost to Completion (Completion Year): \$0 (FY1997)
Final Remedy in Place or Response Complete Date: FY1997



Sabana Seca, Puerto Rico

Restoration Background

The Sabana Seca Naval Security Group Activity operates as a high-frequency direction-finding facility, providing communication and related support to Navy and DoD missions in the area. Areas of concern include a former pest control shop, where pesticides and herbicides were disposed of, and a leachate ponding area, which receives leachate from an adjacent municipal landfill. Because the pesticide-contaminated site (Site 6) is adjacent to the installation's picnic, playground, and housing areas, Sabana Seca Naval Security Group Activity was placed on the National Priorities List (NPL).

In FY84, the installation completed Preliminary Assessments for seven sites, and an Interim Remedial Action (IRA) at Site 5. Only Sites 6 and 7 were recommended for further study.

In FY88, an IRA was completed at Site 6. This action included placing a 6-inch cover of clean soil over the site and fencing the site to prevent exposure to spilled pesticides. In FY93, the installation completed the Site 6 Remedial Investigation (RI), which focused on pesticide and herbicide contamination. A draft Proposed Remedial Action Plan (PRAP) for the site, which was completed in FY94, called for excavation of contaminated soil and disposal of the soil at an off-site location. This proposed action was considered too aggressive in light of the small amount of contaminated soil present. A revised draft PRAP recommended capping with asphalt as the preferred remedy.

In FY89, a Site Inspection (SI) was completed for Site 7. In FY93, the installation conducted a Feasibility Study (FS) at this site to identify an IRA that could protect installation personnel from exposure to leachate from the municipal landfill. A draft FS Report was prepared. In FY94, a Treatability Study on one of the alternatives (constructed wetlands) was initiated, but the study was never completed.

In FY95, the installation completed an Initial SI and began a Baseline Risk Assessment and an Expanded Site Inspection (ESI) for Sites 1 and 3. The Agency for Toxic Substances and Disease Registry performed a public health assessment of the installation.

The installation formed a technical review committee in FY90 and converted it to a restoration advisory board (RAB) in FY96. A community relations plan was prepared in FY91, and an information repository and an administrative record were established in FY94.

FY97 Restoration Progress

The installation completed a Baseline Risk Assessment, an ESI, and a PRAP recommending no further action (NFA), and signed a no-action Record of Decision (ROD) for Sites 1 and 3. In addition, a Baseline Risk Assessment, an SI, and a PRAP recommending NFA were completed, and a no-action ROD signed, for Sites 2 and 4. The asphalt capping Remedial Action at Site 6 was completed, and the area was converted into a parking lot for the picnic area. The FS Report for Site 7 determined that the source of contamination was an off-base, non-Navy controlled landfill, and therefore no remediation was necessary. EPA concurred that no further action and no ROD were needed. Nevertheless, the Navy entered into a partnering agreement with the landfill owners and operators. The partnering agreement allows the Navy to work with the municipality to address the landfill leachate problem at Site 7.

Bilingual materials and activities, including pertinent summary documents, public notices, and a public awareness session were made available by the RAB. The RAB also reviewed and commented on all draft documents.

The two no-action ROD documents, which were used in lieu of a Facility Closeout Report, demonstrate that the Navy has completed all construction activities for all sites at the facility and that the facility is ready to be deleted from the NPL.

Plan of Action

- Have installation deleted from NPL in FY98
- Place administrative record and information repository on CD-ROM in FY98

FY98 FUNDING BY PHASE AND RELATIVE RISK

All sites are in the long-term monitoring phase.

Size: 485 acres
Mission: Repair and maintain communications and electronic equipment
HRS Score: 44.46; placed on NPL in July 1987
IAG Status: IAG signed in 1988
Contaminants: Waste oil and grease; solvents; metal plating wastes; and wastewater containing caustics, cyanide, and metals
Media Affected: Groundwater and soil
Funding to Date: \$56.0 million
Estimated Cost to Completion (Completion Year): \$8.6 million (FY2001)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2001



Sacramento, California

Restoration Background

Environmental studies conducted at the Sacramento Army Depot since FY79 identified 55 sites, 47 of which required no further action. The remaining sites were divided into four operable units (OU). The installation conducted Remedial Investigation and Feasibility Study (RI/FS) activities for the four OUs between FY89 and FY92, and an installationwide RI/FS began in FY92. The Army and regulatory agencies signed Records of Decision (ROD) for all four OUs. The Army completed the Remedial Actions (RA) at all sites, except groundwater cleanup, which requires long-term operation.

In FY93, the installation completed the RA at the Tank No. 2 OU. This RA consisted of use of a soil vapor extraction (SVE) system to clean up soil contaminated with organic solvents. In FY94, air sparging was conducted to treat soil and groundwater at Parking Lot 3 and the Freon 113 Areas. Operation of an SVE system achieved Phase I cleanup goals at the South Post Burn Pits, the source of off-site groundwater contamination. Also in FY94, the installation completed a pilot-scale test of soil washing at the Oxidation Lagoons, a BRAC Cleanup Plan, and a CERFA report.

In FY95, an installation wide ROD and the Environmental Impact Statement (EIS) for disposal and reuse were completed and signed. Other environmental restoration efforts included surveys of all asbestos and lead-based paint, radiation surveys of buildings, and closeout of the Nuclear Regulatory Commission (NRC) license. In the same year, the commander formed a restoration advisory board (RAB) to facilitate communication among regulatory agencies, members of the community, and installation personnel.

In FY96, the installation completed upgrades of the groundwater treatment plant for long-term monitoring and operations. The Army began work to determine the most effective and efficient operation

parameters for the upgraded groundwater treatment plant. The installation completed an RA at the Oxidation Lagoons and South Post Burn Pits. The soil from those two areas was treated and placed in stabilization pits.

The Army received approval to close out the NRC license for Building 300. EPA concurred with the determination that the treatment system at Parking Lot 3 is in place and is functioning as designed, thereby facilitating transfer of the property.

Sacramento Army Depot removed the source of groundwater contamination and installed a groundwater treatment system. Upgrades to the system included new piping systems and additional extraction wells. The Army also inquired about delisting the installation from the National Priorities List (NPL).

FY97 Restoration Progress

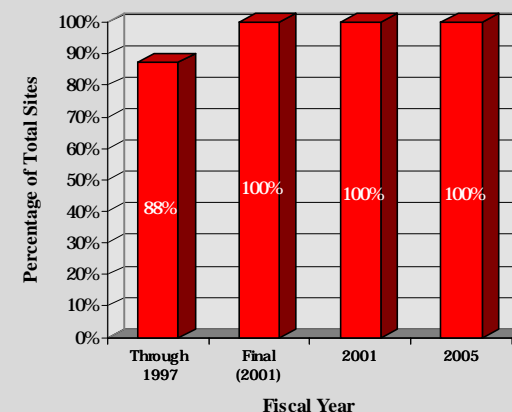
The Army initiated a partial NPL delisting for areas not associated with groundwater contamination. This was made possible by the completion of the soil stabilization project. The Army also determined that a cap for the Old Burn Pits was unnecessary. Transfer of the remaining BRAC parcels did not occur because of delays resulting from additional agency requirements and from data verification. The Burn Pits and Oxidation Lagoons Soil Stabilization cleanups were completed.

The installation maintains a partnership with the agencies through constant and open dialogue.

Plan of Action

- Complete all BRAC activities by the end of FY01

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 1,600 acres
Mission: Used as a repair facility and prisoner of war camp during World War II
HRS Score: Unknown
IAG Status: None
Contaminants: TCE, PCE, and freon 11 and 12
Media Affected: Groundwater
Funding to Date: \$1.8 million
Estimated Cost to Completion (Completion Year): \$1.4 million (NA)
Final Remedy in Place or Response Complete Date: NA



San Bernardino, California

Restoration Background

Camp Ono Army Base closed in 1947. Since then, the area has been developed for light industry and residential uses. The Newmark Groundwater Contamination Site was added to the National Priorities List (NPL) on March 31, 1989, after discovery of two groundwater plumes during a water supply monitoring program. The Newmark and Muscoy plumes are located on the east and west sides of the site, respectively.

The discovery of tetrachloroethene (PCE), trichloroethene (TCE), and chlorinated solvents in the groundwater resulted in the closing of 20 water supply wells. The state brought 12 of the wells back into operation by installing air stripping towers on eight wells and carbon filtration systems on the other four.

In May 1992, EPA conducted a soil gas investigation to evaluate the need for a Removal Action at a suspected disposal site in a residential neighborhood. No volatile organic compounds (VOC) were found in areas above the contaminated groundwater. In FY93, EPA conducted a subsurface survey to investigate a suspected military equipment disposal site; however, no site was found.

An investigation was initiated in FY90 to identify the source of the Newmark plume contaminants and to identify ways of controlling continued down gradient migration while removing contaminants. The investigation determined that the contamination originated at least 2 miles upgradient of the site in another portion of the valley. A pump-and-treat remedy using conventional activated carbon adsorption technology was chosen.

In FY92, an investigation of the Muscoy area was initiated. EPA separated the area into two projects in FY94: one to address the spread of contamination and the other to clean up the source of contamination.

DoD and EPA have been working closely with the U.S. Army Corps of Engineers (USACE) and the San Bernardino County Solid Waste Department to investigate the nature and extent of the contamination. The efforts to date have included research of military archives, numerous interviews, seismic and magnetometer surveys of the subsurface, and construction of four monitoring wells.

In FY88, EPA conducted a preliminary investigation at the installation. EPA also conducted Remedial Investigation and Feasibility Study activities in FY91, FY92, and FY95 and completed two Records of Decision in FY93 and FY94. The site has been divided into three operable units.

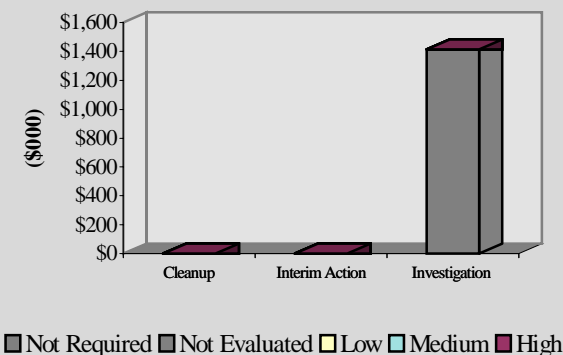
FY97 Restoration Progress

Successful partnering has occurred between EPA Region 9 and USACE personnel on the potentially responsible party (PRP) effort. Granular activated carbon and pump-and-treat remedies were employed by EPA at the former DoD property.

Plan of Action

- Complete PRP report in FY99

FY98 FUNDING BY PHASE AND RELATIVE RISK



Size: 547 acres
Mission: Provide recruit training for enlisted personnel and specialized training for officers and enlisted personnel
HRS Scoring: NA
IAG Status: None
Contaminants: Paint, pesticides, solvents, and petroleum/oil/lubricants
Media Affected: Soil and groundwater
Funding to Date: \$13.6 million
Estimated Cost to Completion (Completion Year): \$17.9 million (FY2009)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2000



San Diego, California

Restoration Background

In July 1993, the BRAC Commission recommended closure of the installation and relocation of personnel, equipment, and mission support to other Naval training centers. Certain installation facilities and activities will be retained to support other Naval operations in the San Diego area. Of the 552 total acres, 503 will be available for transfer.

In FY86, an Initial Assessment Study identified 12 sites that might present environmental problems: five sites are being studied under CERCLA; seven under the underground storage tank (UST) program. Primary site types include a landfill and areas contaminated with petroleum products.

In FY91, a Site Inspection (SI) was completed at one UST site and an SI and Phase I Remedial Investigation (RI) at another. In FY92, free-product removal at a UST site was completed. In FY94, the installation completed an Interim Removal Action at a landfill.

In FY95, a Preliminary Assessment (PA) was completed for three sites, one of which will require no further action. Remedial Designs (RD) were completed for two sites, the RD for a third site is under way. An Expanded SI (ESI) was completed for one UST site. A Removal Action for petroleum-contaminated soil was completed for three UST sites. Human Health and Ecological Baseline Risk Assessments also were completed for one site.

An Environmental Baseline Survey (EBS), completed in FY94, identified 85 points of interest (POI); that number eventually increased to 93. Many of the POIs have been designated for no further action; the installation is studying 18. The installation completed its BRAC Cleanup Plan (BCP) in FY94 and a revised EBS in FY95. It

identified 115 acres for reuse by the Navy in support of other activities in the San Diego area.

A restoration advisory board (RAB) and a BRAC cleanup team (BCT) were established in FY94. In FY92, the installation developed a community relations plan (CRP), which was updated in FY95. The installation also published two fact sheets describing the base conversion process and the UST program. An information repository containing a copy of the administrative record was established in FY94 at the San Diego Central Library.

In FY96, the installation completed an ESI and initiated an Engineering Evaluation and Cost Analysis for one site. SIs were completed for two sites, one of which requires no further action. A site-specific EBS identified two additional sites under the CERCLA program and a PA/SI was completed. The installation completed the investigation for soil and groundwater cleanup for four UST sites, a corrective action plan (CAP) for two UST sites, and excavation of contaminated soil from one UST site. Cleanup was initiated for the two sites covered by the CAP.

FY97 Restoration Progress

An RI/FS was initiated for one site. Groundwater monitoring began at one UST site and continued for two others. RD and corrective actions were initiated and completed for those three sites.

A Site Characterization and Analysis Penetrometer System (SCAPS) assessment technology was implemented at two sites and fieldwork techniques were used to expedite site characterization, including a geoprobe, ground-penetrating radar, and on-site laboratory. Cleanup for Sites 7 and 10 was completed and the installation was closed in April 1997.

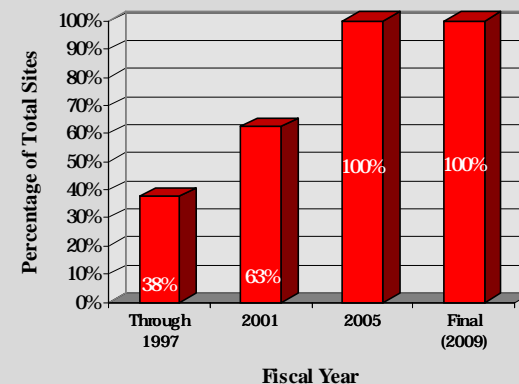
The RAB continued to hold meetings and sponsored an Earth Day open house. The BCT and the port of San Diego discussed implementing early transfer authority. The installation also completed a reuse plan and BCP. To expedite document review and resolve issues, the installation used over-the-shoulder review meetings and addressed fieldwork progress with the regulatory agencies.

Some activities scheduled for completion in FY97 were delayed because of funding delays.

Plan of Action

- Complete the RD and initiate RA for one site in FY98
- Initiate Interim Remedial Actions for two sites in FY98
- Install EPA landfill cap and update BCP and reuse plans in FY98
- Sign a Record of Decision for the Environmental Impact Statement in FY98
- Continue operation and maintenance for two UST sites
- Begin to transfer property in FY00

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 520 acres
Mission: Design, manufacture, produce, research and develop, and repair military aircraft
HRS Score: 42.24; placed on NPL in June 1986
IAG Status: None
Contaminants: Chlorinated solvents, chromium, and petroleum hydrocarbons
Media Affected: Groundwater and soil
Funding to Date: \$3.4 million
Estimated Cost to Completion (Completion Year): \$1.3 million (NA)
Final Remedy in Place or Response Complete Date: NA



Burbank, California

Restoration Background

The former Air Force Plant No. 14 is located in Area 1, Burbank Operable Unit (OU), of the San Fernando Valley Area 1 through 4 site. Since 1941, there has been a geographical, functional, and organizational relationship among Air Force Plant No. 14; two Plancors, 236 and 1193; and Lockheed Martin Corporation's plants and air terminal. The facilities were used for the design, manufacture, and repair of military and civilian aircraft. Air Force Plant No. 14, a government-owned, contractor-operated facility, was established in 1947 when the government exchanged some of its Plancor facilities for Lockheed's Plant B-1. In 1974, all property owned by the Air Force was conveyed to Lockheed Martin Corporation. Since DoD's disposal of this property, Lockheed has used the facilities for the design and production of missiles, satellites, and military and commercial aircraft.

In late 1980, groundwater contamination was discovered in water supply wells in Burbank, California. The wells contained the chlorinated solvents trichloroethene (TCE) and tetrachloroethene (PCE). The results of a groundwater monitoring program conducted from 1981 through 1987 indicated that approximately 50 percent of the water supply wells in the eastern portion of the San Fernando Valley groundwater basin were contaminated.

In 1984, Lockheed began conducting extensive Site Investigations to find the sources of the groundwater contamination and to determine the extent of its migration off site. A number of sources of contamination were found, including a waste disposal area, underground storage tanks, a chip recovery area, sumps, clarifiers, degreasers, and pipes. PCE was found in the groundwater. In June 1986, the Burbank OU was placed on the National Priorities List (NPL).

In FY88, Lockheed received a Cleanup and Abatement Order for soil and groundwater remediation at Plant B-1, Building 175, where a clarifier was found to have a softball-sized hole. Soil and groundwater were remediated by an integrated soil vapor extraction and groundwater treatment system.

In FY89, EPA signed the Record of Decision (ROD) for the remediation of groundwater at the Burbank OU. This groundwater pump-and-treat system is located southwest of Plant B-1.

In FY96, the U.S. Army Corps of Engineers initiated operation of the groundwater pump-and-treat system at Plant B-1. A soil vapor extraction system also began operation at the site.

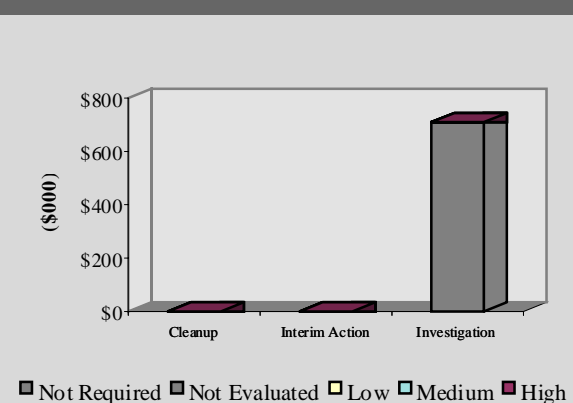
FY97 Restoration Progress

Lockheed Martin filed a CERCLA cost recovery lawsuit against the United States seeking more than \$500 million. Preparation for this litigation delayed accomplishment of some activities scheduled for FY97.

Plan of Action

- Continue review of documents and case development in FY98
- Initiate negotiations with Lockheed in FY98 to establish liability for cleanup

FY98 FUNDING BY PHASE AND RELATIVE RISK



Size: 43,000 acres
Mission: Manufacture and load ordnance for shipping
HRS Score: 43.70; placed on NPL in July 1987
IAG Status: IAG signed in September 1991
Contaminants: Organic solvents, inorganic compounds, PAHs, PCBs, munitions, and heavy metals
Media Affected: Groundwater and soil
Funding to Date: \$0.2 million
Estimated Cost to Completion (Completion Year): \$50.9 million (FY2034)
Final Remedy In Place or Response Complete Date: FY2016



Carterville, Illinois

Restoration Background

The former Illinois Ordnance Plant, which operated from 1942 to 1945, is located on the eastern portion of the U.S. Fish and Wildlife Service's Crab Orchard National Wildlife Refuge. The ordnance plant served as a manufacturing and loading site for high-explosive shells, bombs, and other weapons components.

Thirty-three areas were identified for site investigation. These areas were grouped into four operable units (OU): the PCB OU, the Metals OU, the Miscellaneous OU, and the Explosives and Munitions Manufacturing Area OU. EPA was established as the lead agency for the PCB OU through a Consent Decree issued to Sangamo Electric, Inc. The U.S. Fish and Wildlife Service is responsible for the Metals OU and the Miscellaneous Area OU. The Department of the Army, represented by the U.S. Army Corps of Engineers (USACE), is responsible for the Explosives and Munitions Manufacturing Area OU.

In FY88, a Preliminary Assessment (PA) was conducted at the areas associated with the ordnance plant. A Site Inspection (SI), which focused on 14 sites, also was completed. Results of the PA and SI did not indicate widespread contamination. Two surface munitions bunkers were demolished in FY92. Other unsafe buildings were demolished in FY93.

In FY93, a Remedial Investigation and Feasibility Study (RI/FS) was completed for the PCB OU and the Metals OU. A Record of Decision (ROD) designating the environmental restoration alternative selected for the Metals OU was signed, and most Remedial Design and Remedial Action (RD/RA) activities for the Metals OU were completed in FY95. The ROD for the PCB OU also was completed.

An RI was completed to study the presence and magnitude of contamination at the Explosives and Munitions Manufacturing Area OU. Fieldwork at the OU included installation of monitoring wells, collection of soil borings and sediment samples, and excavation of magnetic anomalies. The FS for this OU was completed in FY95. Also in FY97, the RI process was initiated at the Miscellaneous Area OU, and an Engineering Evaluation and Cost Analysis (EE/CA) for ordnance and explosives waste was undertaken.

In FY96, USACE completed the ROD for the Explosives and Munitions Manufacturing Area OU and undertook fieldwork for the ordnance and explosives waste EE/CA. A draft report was issued, and preliminary study indicated a need for institutional controls. The parties involved determined that the U.S. Fish and Wildlife Service must provide preliminary investigations for uncharacterized sites.

FY97 Restoration Progress

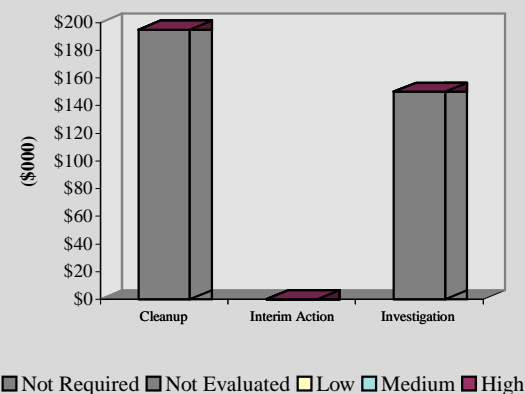
The ROD for the Explosives and Munitions Manufacturing Area OU was signed, and cleanup of the PCB OU was completed. USACE expedited approval of well abandonment plans by adapting previously approved work plans.

Monthly meetings were held with representatives of EPA, Illinois EPA, and the U.S. Fish and Wildlife Service to address issues related to environmental restoration at the site. USACE held a press conference after the completion of the incineration of the PCBs, to involve the RAB and the local community.

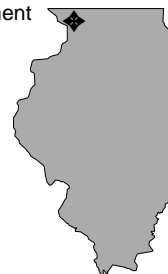
Plan of Action

- Complete risk evaluations for all sites in FY99
- Continue facilitated partnering with EPA and Illinois EPA in FY99

FY98 FUNDING BY PHASE AND RELATIVE RISK



Size: 13,062 acres
Mission: Receive, store, and demilitarize ammunition; manufacture ammunition-specific equipment
HRS Score: 42.20; placed on NPL in March 1989
IAG Status: IAG signed in 1989
Contaminants: Explosives, metals, solvents, petroleum/oil/lubricants, and VOCs
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: \$40.5 million
Estimated Cost to Completion (Completion Year): \$397.9 million (FY2032)
Final Remedy in Place and Response Complete Date for BRAC Sites: FY2009



Savanna, Illinois

Restoration Background

In July 1995, the BRAC Commission recommended closure of the Savanna Depot Activity and relocation of the U.S. Army Defense Ammunition Center and School to McAlester Army Ammunition Plant in Oklahoma.

The installation began operation in 1917 as the Savanna Proving Grounds. During the 1920s, the mission changed to include storage, receipt, issue, demilitarization, and renovation of ammunition.

Contaminants from installation operations were released into the environment at landfills; the open burning and open detonation ground; the fire training area; and ammunition load, assemble, and pack facilities. Remedial Investigation and Feasibility Study (RI/FS) activities, beginning in FY89, delineated the extent of explosives-contaminated groundwater, soil, and sediment at all sites, including the TNT washout lagoons.

In FY90, a Remedial Action (RA) began at the TNT washout lagoons for removal of contaminated sediment. In FY92, the Army and regulators signed a Record of Decision (ROD) approving incineration of TNT-contaminated soil and sediment from the site. In FY93, the installation completed a trial burn and began full-scale sediment removal, incineration, and ash processing operations.

In FY93, the Army began using high-temperature thermal treatment for cleanup of volatile organic compound (VOC)-contaminated soil at the fire training area. In FY94, the installation completed incineration of TNT-contaminated sediment. To promote the use of innovative technologies, the Army hosted a demonstration of an ultraviolet and oxidation (UV/OX) groundwater treatment for removing TNT. During the demonstration, four UV/OX commercial vendors operated their treatment systems. The Army made the final analysis of the demon-

strations available to all DoD installations in an effort to foster technology transfer and communication among installations with similar groundwater contamination concerns. During FY95, the installation completed a trial burn for the high-temperature thermal treatment system at the fire training area.

In FY96, the Army formed a BRAC cleanup team (BCT) and a restoration advisory board (RAB). The installation also began an Environmental Baseline Survey (EBS) and drafted the RI/FS Report for sites with anticipated cleanups. The RI/FS was submitted to the regulators for comments. The installation completed RCRA closure and cleanup activities at the ammunition deactivation furnace. The BCT completed the draft EBS Report and submitted it for regulatory agency review. The installation initiated the BRAC Cleanup Plan (BCP) based on the draft EBS.

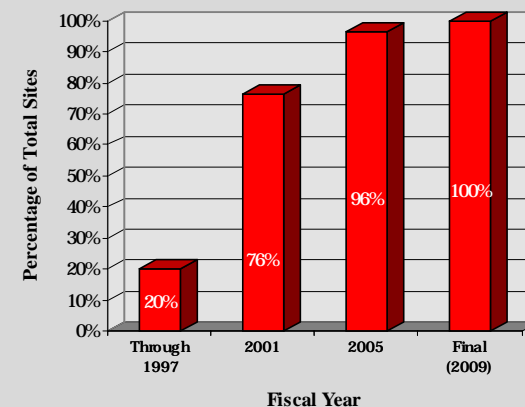
FY97 Restoration Progress

The installation completed the cleanup of the fire training area. It also completed the BCP, which is awaiting EPA approval. The Army signed a Total Environmental Restoration Contract (TERC) with Savanna as the anchor installation. The BCT held meetings each month with the Local Redevelopment Authority (LRA) and regulators. This partnering expedited an RI. The BCT also presented cleanup initiatives to the RAB for input and performed field surveys of the contaminated sites. In addition, the Old Burning Ground project is nearing a ROD, and 11,808 acres have been proposed as CERFA-uncontaminated.

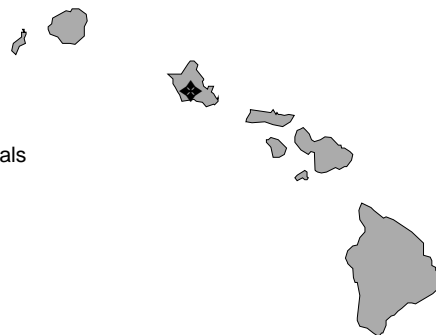
Plan of Action

- In FY98, initiate investigation of EBS-identified sites and sign ROD for Old Burning Ground remediation project
- Complete the Remedial Design (RD) for various ammunition disposal and landfill sites in FY99
- Initiate RA for various ammunition disposal and landfill sites and begin treatment of explosives-contaminated groundwater in FY00
- Complete RD for an innovative bioremediation treatment technology in FY01
- Initiate RA for bioremediation treatment of soil in FY02

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 17,725 acres
Mission: Conduct troop training and operations
HR. Score: 28.90; placed on NPL in August 1990
IAG Status: IAG signed in September 1991
Contaminants: Organic solvents, petroleum/oil/lubricants, and heavy metals
Media Affected: Groundwater and soil
Funding to Date: \$33.0 million
Estimated Cost to Completion (Completion Year): \$29.1 million (FY2100)
Final Remedy in Place or Response Complete Date: FY2000



Oahu, Hawaii

Restoration Background

Environmental studies conducted at Schofield Barracks since FY83 have identified 125 sites. Subsequent investigations concluded that 123 sites require no further action. In FY85, the installation detected trichloroethene (TCE) in drinking water wells on site. Schofield Barracks installed an air stripper treatment system in FY86 to remove TCE from the drinking water.

In FY91, to set priorities and expedite cleanup, the installation separated all sites into four operable units (OU). OU1 consists of suspected sources of TCE contamination; OU2 consists of contaminated groundwater; OU4 consists of the former Schofield Barracks Landfill; and OU3 consists of all other hazardous waste sites identified on the installation.

A Preliminary Assessment and Site Inspection (PA/SI), initiated in FY92, scoped Remedial Investigation and Feasibility Study (RI/FS) efforts for OUs 1, 2, and 4. The installation proposed several initiatives to expedite, and minimize costs associated with, those efforts. For OU2, the installation proposed limiting data collection to support a Remedial Action wellhead treatment strategy. OU4 is being addressed in accordance with EPA guidance on generic remedies for the investigation of CERCLA municipal landfills.

In FY93, RIs conducted for OU1 concluded that none of the sites at that OU required further action. PA/SI efforts for OU3 screened 106 sites and recommended no further action for 72 of those sites. The installation structured the restoration program for OU3 to minimize investigations and move forward quickly to clean up soil as necessary. Removal Actions were completed at seven underground storage tank sites.

In FY94, Phase I RIs for OU2 collected groundwater data from wells in the vicinity of the installation. Data collected allowed the installation to determine the extent of contaminant plumes and allowed evaluation of the hydrology of the site so that the movement of plumes could be predicted and potential receptors identified. Studies for OU2 did not show TCE contamination in wells other than installation supply wells. Sampling and analysis plans were developed and approved for OU3 to collect the limited data needed to screen the sites and determine the need for further action. RIs for OU4 concluded that the landfill is a continuing source of TCE contamination and other contamination in groundwater. However, the direction of the groundwater flow eliminates the landfill as the source of the TCE that is affecting the installation supply wells.

Schofield Barracks concluded investigative efforts for all sites in FY95. The installation drafted a Record of Decision (ROD) for no further action for OU1 and began to draft RI/FS reports for all other OUs.

In FY96, the installation held public availability sessions to solicit interest from the community in forming a restoration advisory board; no interest has been expressed by the community. The Army completed all RODs for this National Priorities List (NPL) site, including OUs 1 through 4. The Army and EPA approved RODs for OUs 1 and 2. The most significant is the ROD for OU2, which calls for long-term monitoring (LTM) of downgradient municipal wells and implementation of wellhead treatment as needed to remove TCE migrating from Schofield Barracks.

FY97 Restoration Progress

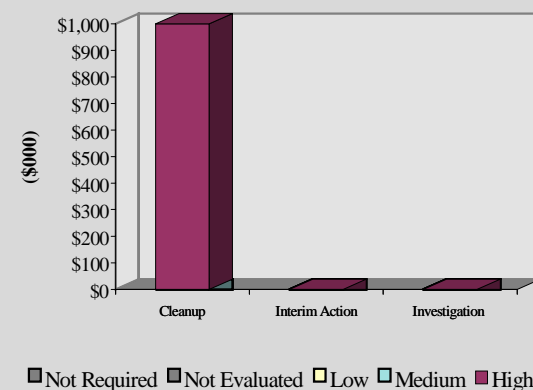
The Army petitioned EPA to delist the installation from the NPL. EPA, the Hawaii Department of Health, and the Army partnered to expedite approval of the remaining two RODs. EPA responded favorably to the NPL delisting proposal and committed to proceed to the delisting following completion of repairs to the former landfill cap for OU4. The groundwater LTM and wellhead treatment required by the OU2 ROD were implemented.

The landfill maintenance scheduled for completion in FY97 was delayed because permitting delays pushed back the start date.

Plan of Action

- Complete the landfill maintenance action for OU4 in FY98
- Work with EPA and Hawaii to delist Schofield Barracks from the NPL in FY98
- Continue OU2 groundwater monitoring and meet regularly with regulators to discuss data and need for further wellhead treatment

FY98 FUNDING BY PHASE AND RELATIVE RISK



Size: 10,594 acres
Mission: Receive, store, distribute, maintain, and demilitarize conventional ammunition, explosives, and special weapons
HRS Score: 37.30; placed on NPL in August 1990
IAG Status: IAG signed in January 1993
Contaminants: Chlorinated solvents, radioactive isotopes, heavy metals, and petroleum hydrocarbons
Media Affected: Groundwater, surface water, sediment, and soil
Funding to Date: \$38.9 million
Estimated Cost to Completion (Completion Year): \$120.3 million (FY2005)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2001



Romulus, New York

Restoration Background

In July 1995, the BRAC Commission recommended closing Seneca Army Depot, except for an enclave that will store hazardous materials and ores. The installation is scheduled to close in FY00.

During its operation, the installation stored munitions and supplies and distributed them to the Army. Operations such as demilitarization and disposal of munitions and explosives contributed to contamination at the installation.

Environmental studies since FY78 have identified the following site types: an open burning (OB) ground, an ash landfill, other landfills, low-level radioactive waste burial grounds, underground storage tanks (UST), spill areas, fire training areas, and munitions disposal areas.

Under the Federal Facility Agreement, the Army completed a solid waste management classification study in FY94. The study identified 72 solid waste management units (SWMU). Thirty-six of these units required no further action or completion reports, 8 required Removal Actions, and 28 required Remedial Investigations and Feasibility Studies (RI/FS). The 28 sites requiring RI/FSs were divided into 13 groups. In FY91, the installation initiated RI/FSs for two of those groups. RI/FSs at three more groups began in FY95 and one group in FY96.

Interim Actions conducted at the installation include removal of several USTs and associated contaminated soil. To expedite cleanup, the installation completed a Removal Action at the ash landfill in FY95. Approximately 25,000 cubic yards of soil were removed and treated by an innovative low-temperature thermal desorption technique that allowed return of the cleaned soil to the site.

In FY96, the installation completed RI/FSs at the first two groups of sites and drafted Proposed Plans. The installation also initiated RI/FS work plans for the remaining groups. Fieldwork began for three of the groups.

The installation commander converted its technical review committee to a restoration advisory board (RAB) and established a BRAC cleanup team (BCT). The installation started an Environmental Baseline Survey (EBS) and submitted a draft CERFA Report to the regulatory agencies for concurrence. On the basis of the EBS, the BCT completed its bottom-up review and developed a strategy for future cleanup actions. The Army determined that the Removal Actions presented in two decision documents that were submitted to the regulatory agencies in FY95 were not cost-effective. Therefore, the planned actions were not implemented. The community formed a local reuse authority and initiated a land reuse plan.

FY97 Restoration Progress

The installation completed the EBS and initiated follow-up action at newly identified sites. The Army's peer review team did a program review to streamline processes, provide technical advice, and recommend potential opportunities for cost savings/avoidance. The installation held monthly RAB meetings, which are open to the public.

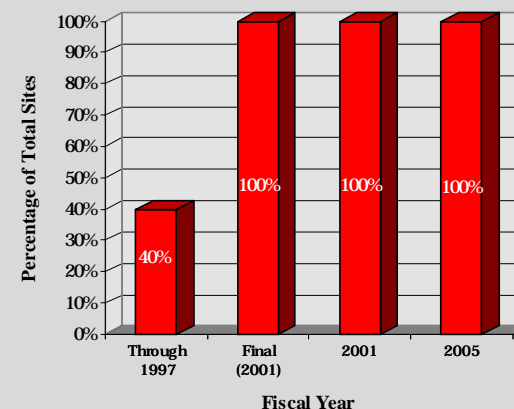
The BCT initiated a peer review action plan to implement peer review recommendations, reprioritized schedules for reuse, and initiated a risk assessment protocol for sites for which there are limited data.

The first four activities on the current plan of action originally were scheduled for completion in FY97 but were delayed. The Proposed Plans for two sites were not completed pending resolution of technical issues; therefore, Records of Decision (ROD) for the sites were not completed. Also, some investigations were not fully funded.

Plan of Action

- Employ ground-penetrating radar and EMS survey in FY98
- Complete RODs and Remedial Designs for the Ash Landfill and OB grounds in FY98
- Continue RIs and initiate three more investigations in FY98
- Integrate remediation efforts under the Local Redevelopment Authority and land reuse plan in FY98
- Complete RODs for three sites in FY98
- Implement peer review recommendations in FY98
- Institute reactive wall treatment of trichloroethene plume in FY98
- Complete a Closure Environmental Impact Statement (EIS) in FY98
- Close the installation in FY00

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 100,501 acres
Mission: Receive, store, maintain, issue, demilitarize, and calibrate special weapons, conventional ammunition, and general supplies
HRS Score: NA
IAG Status: Two-party Federal Facility Agreement signed in May 1991
Contaminants: Petroleum products, solvents, and explosives
Media Affected: Groundwater and soil
Funding to Date: \$28.6 million
Estimated Cost to Completion (Completion Year): \$64.4 million (FY2020)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2002



Herlong, California

Restoration Background

In July 1995, the BRAC Commission recommended realignment of the Sierra Army Depot by eliminating its conventional ammunition mission and reducing the installation to a depot activity. Environmental contamination at the depot originated from burn trenches, explosives leaching beds, landfills, burial sites, spill sites, sewage lines, underground storage tanks, sumps, and fire training areas. Primary contaminants detected in soil and groundwater include trichloroethene (TCE), petroleum products, and explosives. Environmental investigations identified 23 sites at the installation. Twelve sites required no further action. The Remedial Action being conducted at one site uses in-situ bioventing, an innovative technology.

The installation partnered with state regulatory agencies to set up a geographic information system (GIS) at the installation. The installation also worked successfully with the University of Nevada-Reno to develop a cooperative program. Graduate students gain experience by working on and assisting with the installation's hydrology studies. Results of the graduate studies have refined the knowledge of the aquifer in Honey Lake Valley. This information is being used and shared with the community to locate a higher quality, more dependable source of potable water.

Major environmental restoration activities completed in FY95 include a bioventing project at the active fire training area and signature of a Record of Decision (ROD) for nine sites. The seven site RODs specified the use of natural attenuation and degradation for both explosives and TCE in groundwater. This remediation process is ongoing. The selection of this remedy marked the first time that U.S. regulators allowed the use of natural attenuation as an innovative technology for remediating explosive products and TCE in groundwa-

ter. Also in FY95, the Army completed a design implementing composting for treatment of soil contaminated with explosives.

In FY96, the installation commander formed a BRAC cleanup team that published Version 1 of a BRAC Cleanup Plan. The Army developed the design concept for preventing the off-post migration of a TCE-contaminated groundwater plume. The installation updated its community relations plan and used the plan to establish a restoration advisory board in FY97. To address contaminants at various sites, the Army developed an early warning groundwater transducer program to monitor plumes containing petroleum and TCE in the vicinity of the potable water supply network. At the end of FY96, RODs had addressed 17 of Sierra's 23 sites. Work also began on the BRAC NEPA document.

FY97 Restoration Progress

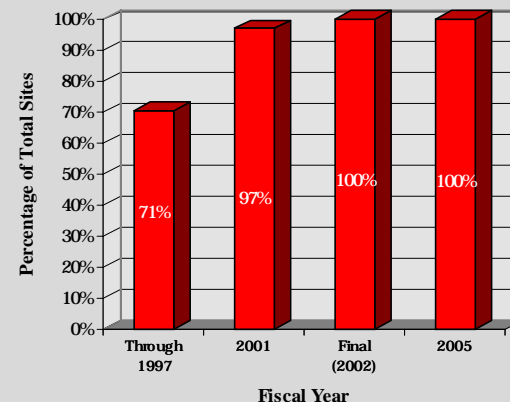
In FY97, an Environmental Baseline Survey (EBS) was completed, and 3,537 acres were identified as CERFA-clean. In addition, a report of availability and an Environmental Condition of Property (ECP) were completed for the BRAC cantonment parcel. Soil from restoration cleanup was recycled for road base. Improved site management techniques were employed at the installation, and a NEPA Categorical Exclusion was used to transfer some BRAC property. Sierra Army Depot was the first BRAC 95 installation to transfer property.

The installation participated in several successful partnering efforts. Cooperative efforts took place between the installation and several organizations in developing GIS. The installation held a signing ceremony for the first cooperative use of the health clinic with the Indian Health Services and for transfer of BRAC housing.

Plan of Action

- Complete Infield Removal Actions for BRAC property Rifle Range in FY98
- Complete Infield Removal Action for BRAC construction debris area in FY98
- Complete Infield Engineering Evaluation and Cost Analysis for BRAC unexploded ordnance areas in FY98
- In FY98, complete field review of contaminated soil area, reducing the cost of remediation by more than 50 percent
- Complete reviews of finding of suitability to transfer or ECP in FY98
- Implement natural attenuation at most contaminated groundwater sites in FY98
- Sign RODs for 18 of 23 sites by FY98
- Improve management process by increasing the use of project review meetings to eliminate exchanges of paper reviews and implementing field review project changes in FY98
- Close three sites currently undergoing remediation by FY99
- Complete the BRAC program, including monitoring requirements, by FY01

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 2,100 acres

Mission: Provide administrative coordination and logistic support for Reserve Units; provide logistic support for the Marine Air Reserve Training Detachment South Weymouth

HRS Score: 50.00; placed on NPL in May 1994

IAG Status: None

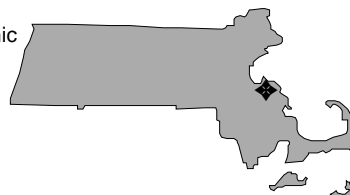
Contaminants: Petroleum hydrocarbons, solvents, acids, paints, metals, photographic chemicals, and industrial wastes

Media Affected: Groundwater, surface water, sediment, and soil

Funding to Date: \$9.6 million

Estimated Cost to Completion (Completion Year): \$19.9 million (FY2005)

Final Remedy in Place or Response Complete Date for BRAC Sites: FY2002



Weymouth, Massachusetts

Restoration Background

In July 1995, the BRAC Commission recommended closure of the South Weymouth Naval Air Station. Operations will be transferred to the Brunswick Naval Air Station, and aircraft, personnel, and equipment will be relocated. The installation was closed on September 30, 1997.

Initially, eight CERCLA sites and one RCRA underground storage tank (UST) site were identified at the installation. One of the CERCLA sites, Site 6, is being investigated as a UST site. Prominent site types include a landfill, a tank storage area, a tank farm where jet fuel is stored in five USTs, a rubble disposal area, and a fire training area.

In FY91, the waste oil tank was removed from UST 1. In FY93, an initial investigation was completed for the UST site. Between FY88 and FY91, the installation completed a Preliminary Assessment for five sites and a Site Inspection for eight sites. In FY92, several compressed chlorine gas cylinders and pesticide containers were removed from an old sewage treatment plant (Site 7). In FY93, the installation conducted a second Removal Action at Site 7 to remove contaminated soil and liquids. In FY95, during a preliminary corrective action involving removal of soil, the installation identified additional contamination at UST 1.

A third UST site (UST 2) was identified at Squantum Gardens Housing Area. Two Removal Actions, one to remove tanks and the other to remove contaminated soil, were completed for the site. The Agency for Toxic Substances and Disease Registry completed a public health assessment of the installation. The installation established a technical review committee in FY92 and converted it to a restoration advisory board (RAB) in FY94. The RAB has 20 members and meets monthly. The installation established an administrative record and

three information repositories in FY92 and completed its community relations plan (CRP) in FY93.

During FY96, the installation formed a BRAC cleanup team and began to develop its BRAC Cleanup Plan (BCP). A corrective action plan was completed for UST 1, and a corrective action was initiated for UST 2. The installation continued a Remedial Investigation (RI) for seven sites and began work on Phase I of the Environmental Baseline Survey (EBS).

FY97 Restoration Progress

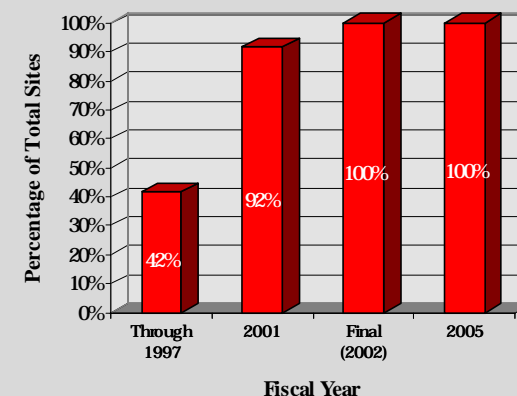
Installation operations ceased in September 1997. The design for UST 1 and the corrective action for UST 2 were completed. In addition, Phase I of the EBS was finished and Phase II was initiated. The RI Phase I Report was submitted as a draft document in FY97.

The BCT continued to meet to discuss the project progression, propose new ideas, and foster cooperation with the community members and regulatory agencies. The installation hosted an environmental workshop and regular base and site tours to increase public participation. The RAB progress in FY97 included technical review of documents and input regarding the relative risk evaluation.

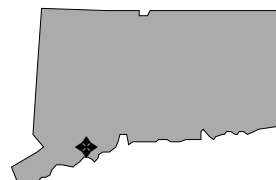
Plan of Action

- Initiate Feasibility Studies (FS) for two sites in FY98
- Update the CRP and complete the BCP in FY98
- Continue Phase II of the EBS, initiate EBS Phase II field program, and complete latest version of EBS in FY98
- Complete RI Phase I Report and RI Phase II work plans in FY98
- Foster partnership with EPA, Massachusetts Department of Environmental Protection, and the Navy in FY98

SITES ACHIEVING RIP OR RC PER FISCAL YEAR



Size: 128 acres
Mission: Manufacture engines for heavy armor vehicles and rotary wing aircraft
HRS Score: NA
IAG Status: None
Contaminants: PCBs, asbestos, fuel-related VOCs, solvents, metals, and PAHs
Media Affected: Groundwater, soil, surface water, and sediment
Funding to Date: \$3.1 million
Estimated Cost to Completion (Completion Year): \$32.3 million (FY2001)
Final Remedy in Place or Response Complete Date for BRAC Sites: FY2001



Stratford, Connecticut

Restoration Background

In July 1995, the BRAC Commission recommended closure of the Stratford Army Engine Plant. The installation is scheduled to close on September 30, 1998.

Since FY91, environmental studies at the installation have identified the following site types: transformers that contain polychlorinated biphenyls (PCB), 29 underground storage tanks (UST), two sludge lagoons, one fire training and explosives equipment testing area, approximately 10 hazardous materials and hazardous waste storage areas, and several buildings constructed from asbestos-containing materials. Preliminary studies indicate that contaminants at the installation may include PCBs, fuel-related volatile organic compounds (VOC), solvents, metals, polyaromatic hydrocarbons (PAH), and asbestos.

Interim Actions conducted at the installation have included removal of 27 USTs, capping of two sludge lagoons, and capping of one large parking lot area to immobilize contaminated soil. The installation closed two USTs in place. In FY95, the installation began a Remedial Investigation (RI) to identify and characterize contamination and affected media throughout the installation.

In FY96, the Army appointed a BRAC environmental coordinator (BEC) and formed a BRAC cleanup team (BCT). The community formed a Local Redevelopment Authority to address socioeconomic issues related to closure of the installation and to develop a land reuse plan. Phase II of the RI was completed. The installation held two public meetings to keep the community informed about all BRAC activities and property disposal. The installation also began an asbestos survey of all buildings and started the NEPA process,

including an archive search. A draft final Environmental Baseline Survey (EBS) and a draft BRAC Cleanup Plan (BCP) were completed.

FY97 Restoration Progress

In December 1996, the installation received concurrence from the appropriate regulatory agencies on the EBS and CERFA Reports. In August 1997 RI Phase III began. The installation amended work plans for the RI and Feasibility Study (FS) to tighten schedules and activities. As a result, schedule and deliverables were monitored more closely. The BCT reviewed the EBS and CERFA Reports. The latest version of the BCP was completed in June 1997. The appropriate regulatory agencies concurred with the proposed designation of 3 acres as CERFA-uncontaminated. The installation improved its management practices by implementing systems for monitoring schedules and budgets.

The first two activities on the current plan of action were originally scheduled for completion in FY97. They were postponed due to funding delays, a vacant BEC position, and a previous RI activity that had not produced risk evaluation quality data to support any remedy selection.

Plan of Action

- Compile a community relations plan in FY98
- In FY98, select remedies to address contamination identified at the installation
- Perform risk analysis at CERFA units in FY99
- Accelerate cleanup by focusing and carefully monitoring the schedule for the RI/FS and by using Removal Actions for the appropriate documented actions where possible

SITES ACHIEVING RIP OR RC PER FISCAL YEAR

